IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

BARKAN WIRELESS IP HOLDINGS, L.P.,

Plaintiff,

v.

SPRINT CORPORATION, SPRINT COMMUNICATIONS CO., L.P., SPRINT SOLUTIONS, INC., SPRINT SPECTRUM L.P., and COMMSCOPE INC.,

Defendants.

Civil Action No. 19-cv-336

JURY TRIAL DEMANDED

AMENDED COMPLAINT FOR PATENT INFRINGEMENT

1. Plaintiff BARKAN WIRELESS IP HOLDINGS, L.P. ("Plaintiff"), for its Complaint against Sprint Corporation, Sprint Communications Co., L.P., Sprint Solutions, Inc., Sprint Spectrum, L.P., (collectively, "Sprint"), and CommScope, Inc. (together with Sprint, collectively "Defendants") alleges:

THE PARTIES

2. Plaintiff is a Delaware limited partnership founded by Dr. Elad Barkan ("Dr. Barkan"), an Israeli computer scientist and inventor. Dr. Barkan received his Ph.D. from the Technion – Israel Institute of Technology in Haifa, Israel, and is now a researcher at the Weizmann Institute of Science, a research university in Rehovot, Israel. Dr. Barkan also serves as the Chief Scientist of KeySee Software Ltd.

3. Plaintiff is informed and believes, and on that basis alleges, that defendant Sprint Corporation is a Kansas corporation with its principal place of business at 6200 Sprint Parkway, Overland Park, Kansas 66251. Sprint Corporation is doing business on an ongoing basis in this

judicial district and has regular and established places of business in this judicial district. Sprint Corporation may be served through its registered agent Corporation Service Co., 251 Little Falls Drive, Wilmington, DE 19808.

4. Plaintiff is informed and believes, and on that basis alleges, that defendant Sprint Communications Company L.P. ("SCC") is a Delaware limited partnership with a principal place of business at 6200 Sprint Parkway, Overland Park, Kansas 66251, and that SCC is a wholly owned indirect subsidiary of Sprint Corporation. SCC is doing business on an ongoing basis in this judicial district and has regular and established places of business in this judicial district. SCC may be served through its registered agent Corporation Service Co., 251 Little Falls Drive, Wilmington, DE 19808.

5. Plaintiff is informed and believes, and on that basis alleges, that Sprint Solutions, Inc. ("SSI") is a Delaware corporation with its principal place of business at 6200 Sprint Parkway, Overland Park, Kansas 66251, and that SSI is a wholly owned indirect subsidiary of Sprint Corporation. SSI is doing business on an ongoing basis in this judicial district and has regular and established places of business in this judicial district. SSI may be served through its registered agent Corporation Service Co., 251 Little Falls Drive, Wilmington, DE 19808.

6. Plaintiff is informed and believes, and on that basis alleges, that defendant Sprint Spectrum L.P. ("Sprint Spectrum") is a Delaware limited partnership with its principal place of business at 6200 Sprint Parkway, Overland Park, Kansas 66251, and that Sprint Spectrum is a wholly owned indirect subsidiary of Sprint Corporation. Sprint Spectrum is doing business in this judicial district and has regular and established places of business in this judicial district. Sprint Spectrum may be served through its registered agent Corporation Service Co., 251 Little Falls Drive, Wilmington DE 19808.

7. Plaintiff is informed and believes, and on that basis alleges, that CommScope is a Delaware corporation with its principal place of business at 1100 10th Ave. Ct Southeast, Hickory, North Carolina 28602. In 2015, CommScope acquired Airvana, a provider of small cell and femtocell technology that was based in Chelmsford, Massachusetts. *See CommScope to Acquire Leading Small Cell Provider Airvana*, COMMSCOPE (Sept. 8, 2015), available at https://www.commscope.com/NewsCenter/PressReleases/CommScope-to-Acquire-Leading-Small-Cell-Provider-Airvana (last visited Oct. 7, 2019). CommScope is doing business, either directly or through its agents, on an ongoing basis in this judicial district and has a regular and established place of business in this judicial district. CommScope may be served through its registered agent Corporation Service Co., 251 Little Falls Drive, Wilmington DE 19808.

JURISDICTION AND VENUE

8. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq*.

9. This Court has personal jurisdiction over Sprint because, *inter alia*, it has done and continues to do business in Texas, and has committed and continues to commit acts of patent infringement in the state of Texas, including making, using, offering to sell and/or selling accused products in Texas, and/or importing accused products into Texas, and/or inducing others to commit acts of patent infringement in Texas, including at regular and established physical places of business, such as retail stores.

10. Venue is proper as to Sprint under 28 U.S.C. § 1400(b). Plaintiff is informed and believes, and on that basis alleges, that Sprint has committed acts of infringement and has a regular and established place of business in this District.

11. For example, Plaintiff is informed and believes, and on that basis alleges, that Sprint operates a number of retail stores in this District through which it transacts business. This includes Sprint retail stores located at 1806 E. End Blvd. N. Ste. 100, Marshall Texas 75670 and 116 E. Loop 281 Ste. 101, Longview Texas 75605. *See Find a Sprint Location Near You*, SPRINT, https://storelocator.sprint.com/locator (last visited Oct. 7, 2019).

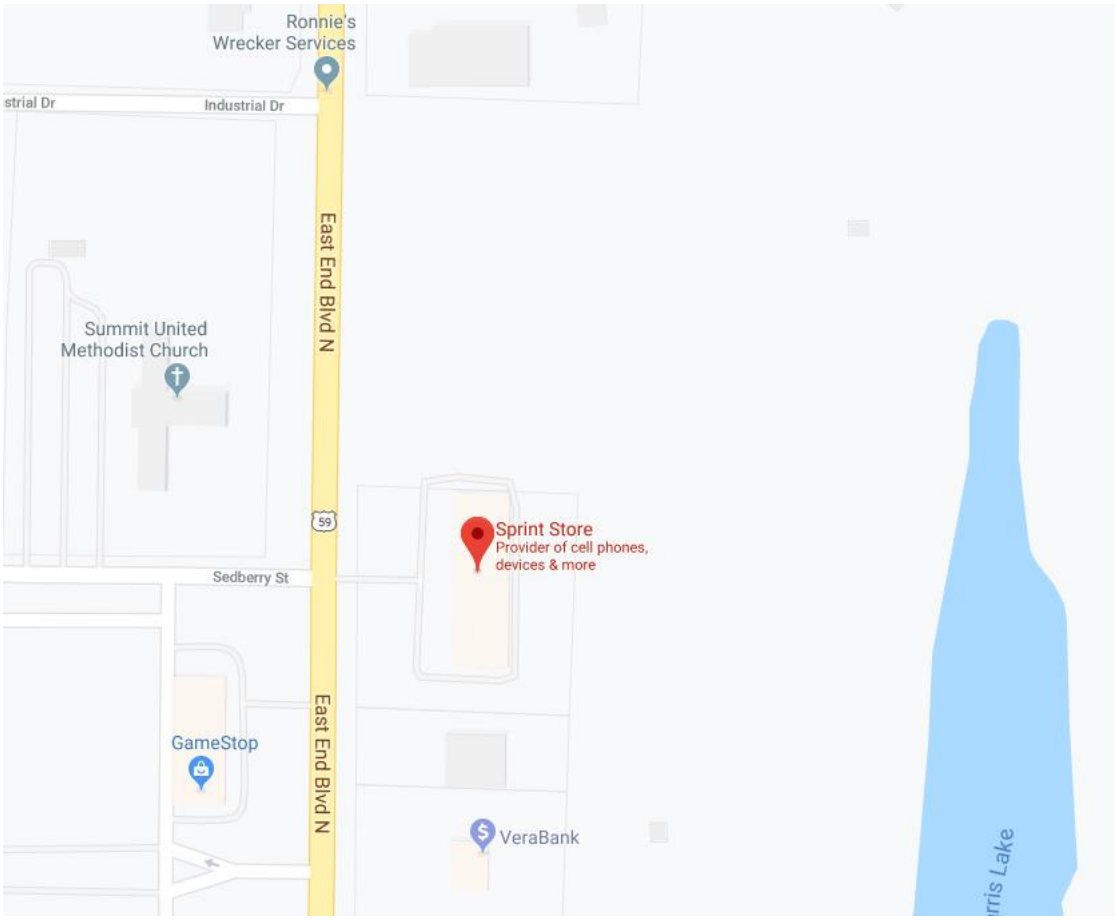


Fig. 1. Depicting Sprint retail store located at 1806 E. End Blvd. N., Marshall TX 75670.

Fig. 2. Depicting Sprint retail store located at 1806 E. End Blvd., Marshall TX 75670.

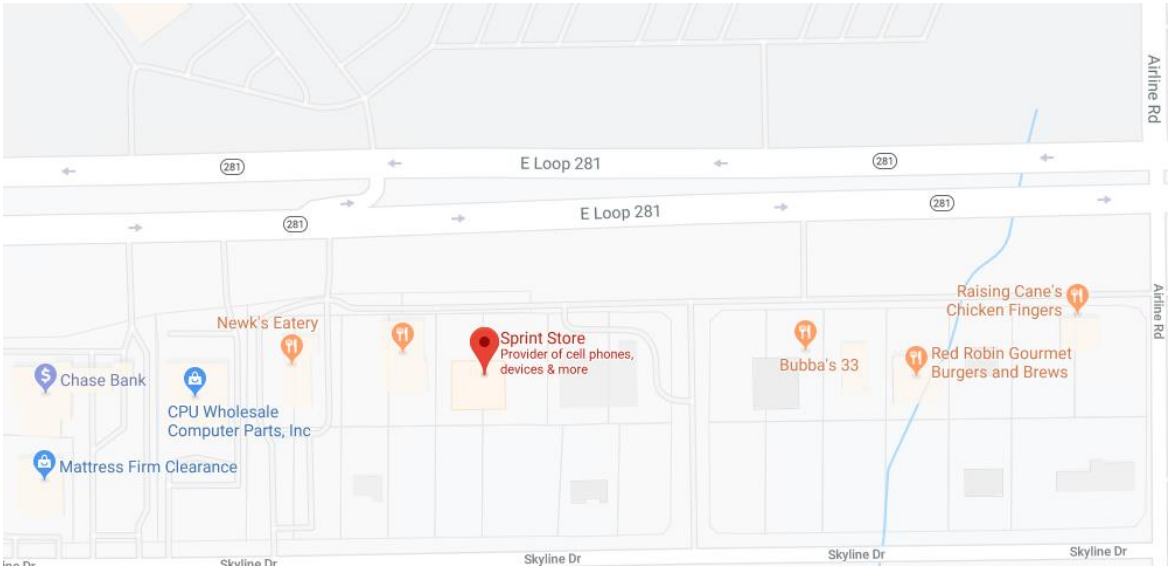


Fig. 3. Depicting Sprint retail store located at 116 E. Loop 281 Ste. 101, Longview Texas 75605.

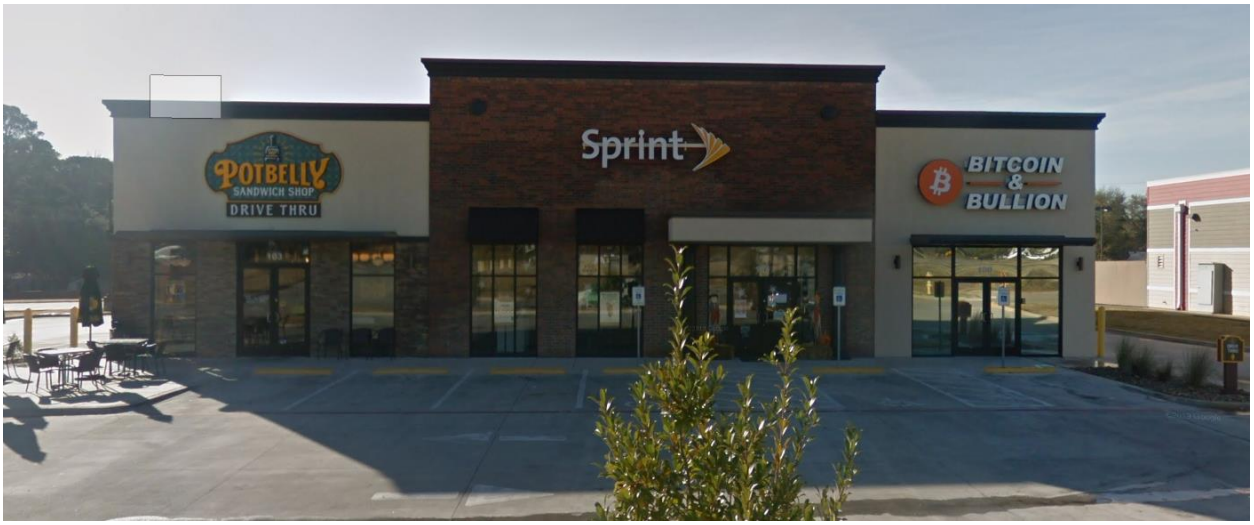


Fig. 4. Depicting Sprint retail store located at 116 E. Loop 281 Ste. 101, Longview Texas 75605.

12. Sprint's commission of acts of infringement, and the presence of Sprint retail stores in the Eastern District of Texas, establishes venue over it under 28 U.S.C. § 1400(b). *See, e.g., Intellectual Ventures II LLC v. FedEx Corp.*, No. 16-cv-980-JRG, 2017 WL 5630023, at *6-*7 (E.D. Tex. Nov. 22, 2017) (Gilstrap, J.) (venue proper based on defendants' "physical retail and service locations").

13. In fact, in numerous recent actions, Sprint has either admitted or not contested that the Eastern District of Texas is a proper venue for patent infringement actions against it. *See, e.g.*, Answer ¶ 19, *SOL IP LLC v. AT&T Mobility, LLC*, No. 18-cv-526 (E.D. Tex. Mar. 4, 2019); Answer ¶ 28, *Mobile Synergy Solutions, LLC v. Sprint Corp.*, No. 18-cv-445 (E.D. Tex. Nov. 2, 2018); Answer ¶ 8, *Fractus, S.A. v. AT&T Mobility LLC*, No. 18-cv-135 (E.D. Tex. June 15, 2018); Answer ¶ 8, *Traxcell Techs., LLC v. Sprint Commc'ns Co., LP*, No. 2:17-cv-719 (E.D. Tex. Jan. 22, 2018), ECF No. 13; Answer ¶¶ 8–9, *Preferential Networks IP, LLC v. Sprint Spectrum L.P*, No. 2:17-cv-197 (E.D. Tex. Sept. 21, 2017), ECF No. 42; Answer ¶¶ 4–5,

Location Based Servs., LLC v. Sprint Spectrum L.P., No. 2:17-cv-567 (E.D. Tex. Oct. 9, 2017), ECF No. 13. Sprint has also admitted or failed to contest that it has transacted business in this district. *See, e.g.*, *Traxcell Techs.*, Answer ¶ 7; *Preferential Networks*, Answer ¶¶ 8–9; *Location Based Servs.*, Answer ¶ 4.

14. This Court has personal jurisdiction over CommScope because, among other things, CommScope has done and continues to do business in Texas, and has committed and continue to commit acts of patent infringement in the state of Texas, including making, using, offering to sell and/or selling accused products in Texas, and/or importing accused products into Texas, and/or inducing others to commit acts of patent infringement in Texas. For example, CommScope operates offices at which it does business in Texas at 2601 Telecom Parkway, Richardson, Texas 70852; 11312 S. Pipeline Road, Eulees, Texas 76040; and 4101 W. Military Highway A, McAllen Texas 78053.

15. Venue is proper as to CommScope under 28 U.S.C. § 1400(b). Plaintiff is informed and believes, and on that basis alleges, that CommScope has committed acts of infringement and has a regular and established place of business here.

16. Plaintiff is informed and believes, and on that basis alleges, that CommScope has a regular and established physical place of business in the Eastern District of Texas, including at 2601 Telecom Parkway, Richardson Texas 70852, as depicted below.

Fig. 5. Depicting CommScope's offices at 2601 Telecom Parkway, Richardson TX 75082.

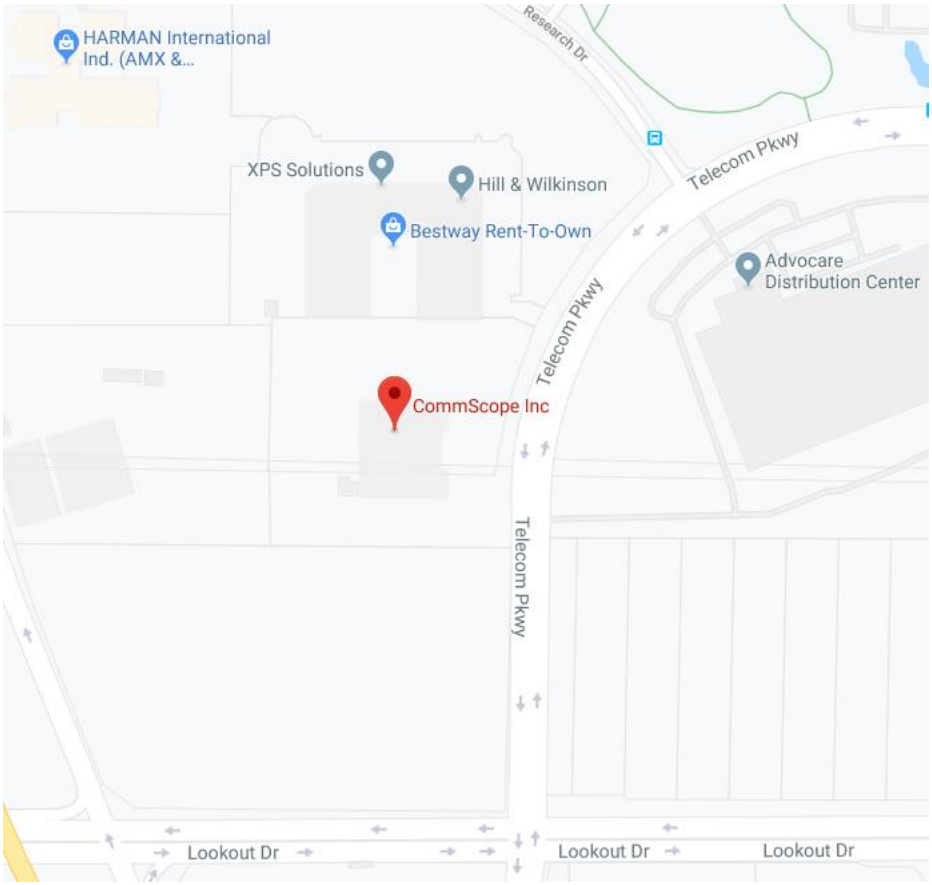


Fig. 6. Depicting CommScope's offices at 2601 Telecom Parkway, Richardson TX 75082.

17. CommScope's commission of acts of infringement here, and the presence of a sizeable office at which CommScope does business in the Eastern District of Texas, establishes venue over it under 28 U.S.C. § 1400(b). *See In re Cray, Inc.*, 871 F.3d 1355, 1362 (Fed. Cir. 2017) (describing location sufficient to establish venue as a "physical, geographical location in the district from which the business of the defendant is carried out").

SINGLE ACTION

18. This suit is commenced against Defendants pursuant to 35 U.S.C. § 299 in a single action because (a) a right to relief is asserted against the parties jointly, severally, or in the alternative with respect to or arising out of the same transaction, occurrence, or series of transactions or occurrences relating to the making, using, importing into the United States, offering for sale, and/or selling of the same accused products or processes and (b) questions of fact common to all defendants will arise in the action.

19. Plaintiff is informed and believes, and on that basis alleges, that CommScope and/or Sprint manufacture and/or sell and/or offer for sale the same products and processes accused in this action, including the "Airave" and "Magic Box Gold" devices.

PATENTS-IN-SUIT

20. Plaintiff, as assignee, is the owner of all right, title, and interest in United States Patent No. 8,559,312 (the "'312 patent"), entitled "Systems, Devices and Methods for Providing Access to a Distributed Network," a true and correct copy of which is attached hereto as Exhibit A. The '312 patent is designated a continuation of the application that resulted in United States Patent No. 8,014,284 (the "'284 patent"); bears a domestic filing date of July 13, 2011; and was duly and legally issued by the PTO no later than October 15, 2013. Dr. Barkan is the inventor of the '312 patent.

21. Plaintiff, as assignee, is the owner of all right, title, and interest in United States Patent No. 9,392,638 (the "'638 patent") entitled "Systems, Devices and Methods for Providing Access to a Distributed Network," a true and correct copy of which is attached hereto as Exhibit B. The '638 patent is designated a continuation of the applications resulting in the '284 and '312 patents; bears a domestic filing date of August 21, 2012; and was duly and legally issued by the PTO no later than July 12, 2016. Dr. Barkan is the inventor of the '638 patent.

22. Plaintiff, as assignee, is the owner of all right, title, and interest in United States Patent No. 8,014,284 entitled "Systems, Devices and Methods for Providing Access to a Distributed Network," a true and correct copy of which is attached hereto as Exhibit C. The '284 patent bears a domestic filing date of June 4, 2001; and was duly and legally issued by the PTO no later than September 6, 2011. Dr. Barkan is the inventor of the '284 patent.

23. Collectively, the '312, '638, and '284 patents are referred to as the "patents-in-suit."

24. At the time of the invention, it was "relatively expensive, time consuming, and difficult to install cellular networks"—especially in "highly populated urban areas." Ex. A, '312 Patent, at 1:27-:29. Traditional cellular base stations (like cell phone towers) "require[] a large investment to install," "service," and "maintain," and a high number of complicated "switchboard" systems. *Id.* at 1:47-:56. Another problem of traditional cellular infrastructure is the "relatively high transmit power" at which cell phones must transmit a signal in order to communicate with cell-phone towers. *Id.* at 1:32.

25. Plaintiff's patents-in-suit solved many of the problems associated with traditional cellular infrastructure. Generally speaking, Plaintiff's patents-in-suit relate to the expansion of cellular networks, in areas in which signal coverage is weak or nonexistent, using coordination

centers and existing network infrastructure—such as cable television, internet, or wired telephone connections—to route cellular communications through add-on base stations in lieu of cell phone towers.

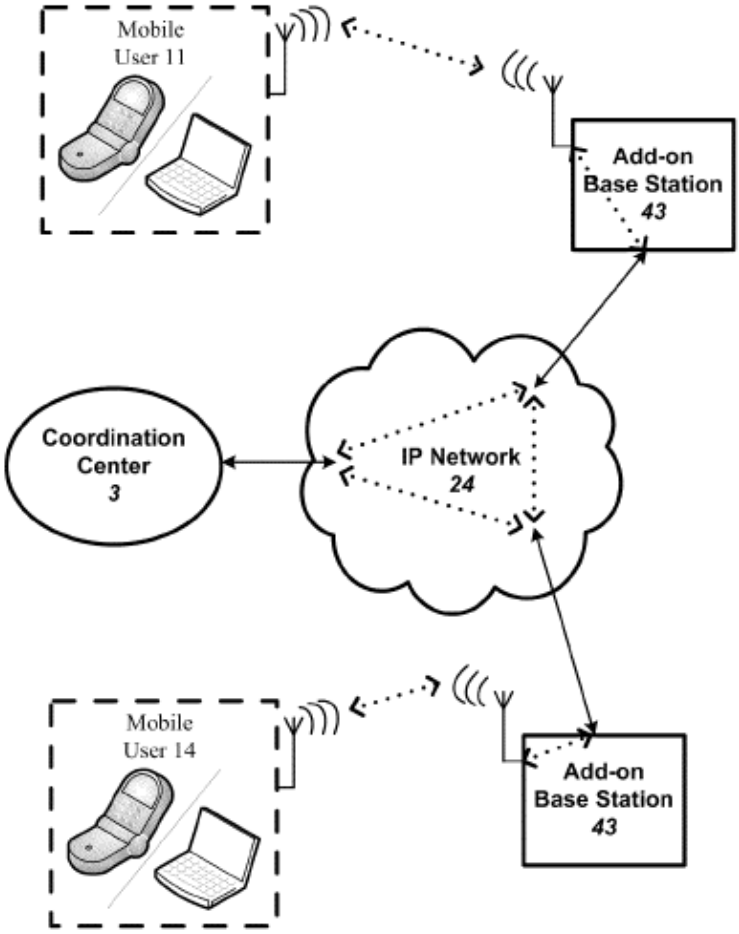


Fig. 7. Illustration from '312 patent of cellular communications routed through existing network infrastructure to add-on base stations.

26. Plaintiff's patents-in-suit, generally speaking, disclose systems, devices, and methods for expanding cellular coverage using a gateway, consisting of a transceiver that establishes a radio-frequency link with a mobile device; an interface that facilitates data flow between a mobile device and a packet-based data network (such as the Internet); and a connection regulator that regulates data flow between a mobile device and the data network. The

information is regulated at least partly on information received over the data network from a coordination center, which connects to the data network through a second interface.

27. The patents-in-suit describe a preferred embodiment as follows:

> New base station **43** illustrates yet another type of network enhancement. It generates a wireless cell that is directly connected to an Internet **24**.
>
> Thus, new base station **43** adds a new wireless cell in a location where there is available a link to an Internet network **24**.
>
> The system uses the existing infrastructure, for example cable TV, Internet connections and phone networks to provide additional wireless coverage. The above detailed structure and method may be used for other networks as well. These may include, among others, wireless links, satellite links, cable TV links, fiber-optics or a combination thereof.
>
> Thus, new base stations **41**, **42**, and **43** allow to use the existing telecommunication infrastructure in developed areas, to enhance the cellular network.[1]

28. The systems, devices, and methods covered by the patents-in-suit—which have been implemented in, among other inventions, what are known as "femtocells"—yield substantial benefits for both consumers and telecommunications providers.

29. When using implementations of the invention, including femtocell devices, consumers benefit from increased cell signal strength; reduced cell phone battery consumption; diminished radiation exposure; higher voice communication quality; the ability to place calls on a mobile device from indoor locations, or areas of a home or business that would otherwise be inaccessible; and ease of installation.

30. Telecommunications providers benefit from, *inter alia*, access to additional consumers; increased capacity as subscribers are offloaded from cell phone towers to existing network infrastructure; and reduced expenditures due to the use of small base stations—which

[1] *See* Exhibit A, at 12; Exhibit B, at 12; Exhibit C, at 12.

may be purchased and installed by consumers—in lieu of traditional cellular network infrastructure.

31. Sprint, and public news reporting, has trumpeted the significant benefits that Sprint femtocell devices, including the Accused Products, would generate for Sprint. Such benefits include not "having to invest in more cell towers" and "boost[ing] coverage."

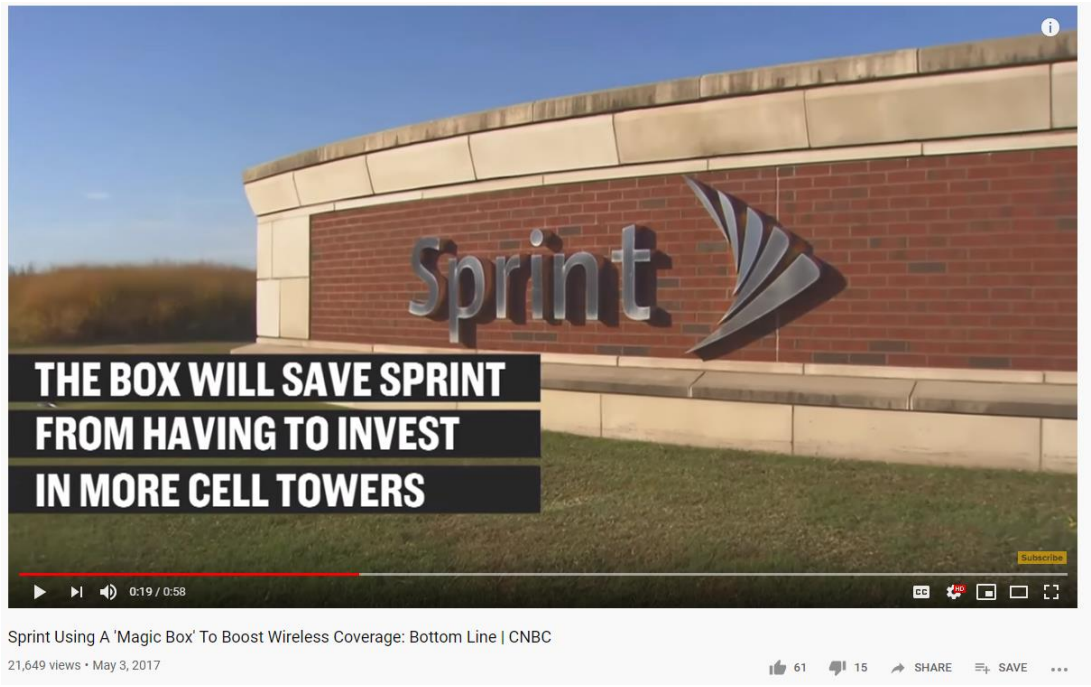


Fig. 8. Sprint Using a Magic Box to Boost Wireless Coverage: Bottom Line, CNBC, YOUTUBE, *available at* https://www.youtube.com/watch?v=qB-2Ovvnqos.

Fig. 9. Sprint Using a Magic Box to Boost Wireless Coverage: Bottom Line, CNBC, YOUTUBE, available at https://www.youtube.com/watch?v=qB-2Ovvnqos.

DEFENDANTS AND THEIR INFRINGING PRODUCTS

32. CommScope, established in 1976, is a multinational network infrastructure provider company that was spun off from General Instrument. CommScope has over 20,000 employees worldwide; customers in over 130 countries, and annual revenues of approximately $4.6 billion.

33. Sprint is an American telecommunications company that provides wireless and internet services. Sprint is the fourth-largest mobile network operator in the United States; serves over 50 million customers; and has annual revenues of approximately $33.6 billion.

34. Defendants make, use, offer to sell, sell and/or import into the United States products and/or systems that infringe the patents-in-suit, including, but not limited to, the Sprint Airave 2, Sprint Airave 2.5, Sprint Airave 3, Sprint Airave 4, and Sprint Magic Box Gold (the "Accused Products").

35. Sprint sells and/or distributes the Accused Products to its customers. *See, e.g.*, *Frequently Asked Questions: Airave*, SPRINT, https://www.sprint.com/en/support/solutions/device/airave-support-center.html ("How do I get a Sprint Airave or see if I qualify? All customers must first qualify for Sprint Airave. . . . Is there a cost associated with Sprint Airave? Airave is free to use and there are no upfront costs."); *Frequently Asked Questions: MagicBox Gold*, SPRINT, https://www.sprint.com/en/support/solutions/device/magic-box-gold-support-center.html?INTCID=LP:Magicboxgold:20181712:learnmore ("All customers must first qualify for Sprint Magic Box. Qualification is based on a number of network and account criteria to ensure that Magic Box will work for the customer and the Sprint Network.").

36. CommScope, and its predecessor-in-interest Airvana, manufactured and/or sourced the Sprint Airave 2; Sprint Airave 2.5; and Sprint Airave 3.

Fig. 10. Product packaging for the Airave 2 indicating that it is manufactured by "Airvana," which was acquired by CommScope.

Fig. 11. Product packaging for the Airave 2.5 indicating that it is manufactured by "Airvana," which was acquired by CommScope.

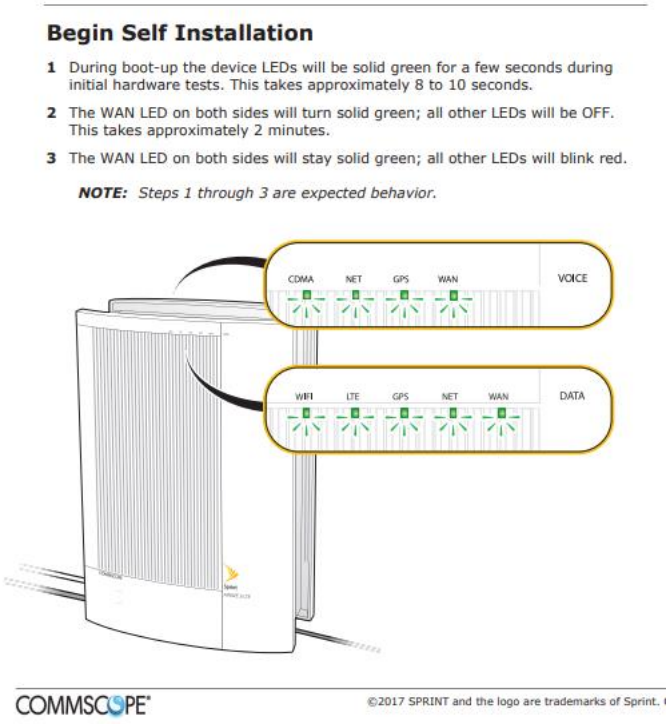


Fig. 12. Airave 3 "Getting Started Guide" indicating that the device is manufactured by "CommScope."

37. Defendants' Accused Products are offered for sale online, including through the Sprint website. *See Sprint Airave Suport*, SPRINT, https://www.sprint.com/en/support/solutions/device/airave-support-center.html; *Sprint Magic Box*, SPRINT, https://www.sprint.com/en/support/solutions/device/magic-box-support-center.html; *Improve Your Sprint LTE Data Experience with Magic Box*, SPRINT, https://www.sprint.com/en/shop/services/magic-box.html.

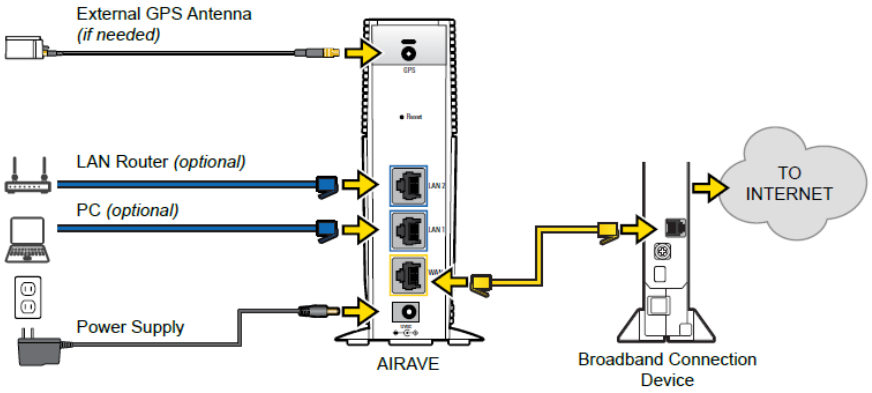
38. The Accused Products are touted as a means of expanding access to Sprint cellular service using Sprint coordination centers and existing network infrastructure, such as a broadband Internet connection, by routing cellular communications through add-on base stations in lieu of cell phone towers. According to Sprint, the Airave is an "[e]asy to use, easy to install" device that "delivers a stronger, more reliable voice and data experience by leveraging your home internet." Sprint Airave Support, SPRINT, https://www.sprint.com/en/support/solutions/device/airave-support-center.html. User guides for the Airave likewise state that it "provides a booster signal for your wireless voice and 3G data services. It's like having your very own cell tower."[2]

39. The Accused Products include, as disclosed by Plaintiff's patents, a gateway to a packet-based data network comprising: a transceiver adapted to establish a radio frequency link with a mobile device; a connector to a packet based data network; and a connection regulator that is adapted to facilitate data flow between the mobile device and the packet-based data network, wherein the gateway is adapted to determine its own physical location.

[2] Sprint Airave 2.5 Troubleshooting Guide, at b.

Setup Overview

The following steps show a typical installation using a broadband cable modem. If you are using a different type of broadband connection, the steps will be similar. For detailed setup instructions, see the Read Me First insert provided in your box or online at sprint.com/airaveaccesspoint.



Attention: After installing and turning on your AIRAVE for the first time, it will go through an automated setup sequence. During this time, the device's LEDs will change color. When the Broadband, GPS, Network, and Mobile LEDs have changed to steady green, your AIRAVE is ready to use. This process may take up to two hours. For additional details about the AIRAVE 2.5 please see the User Guide or see "Resources" in this guide.

Fig. 13. Airave 2.5 Troubleshooting Guide, at 4: Illustrating the Airave establishing a radio-frequency link with a mobile device and connecting to, for example, the Internet (through WAN, or Wide Area Network) Port.

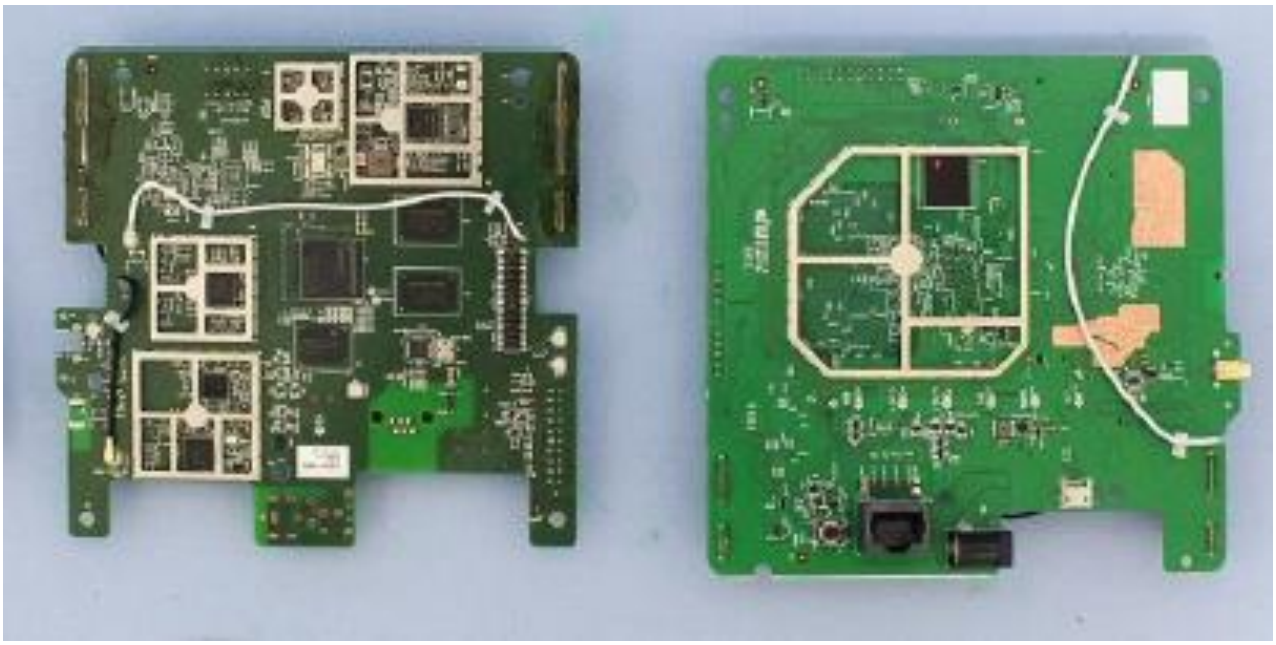


Fig. 14. Teardown of a Sprint Airave depicting circuitboard, including a connection regulator.

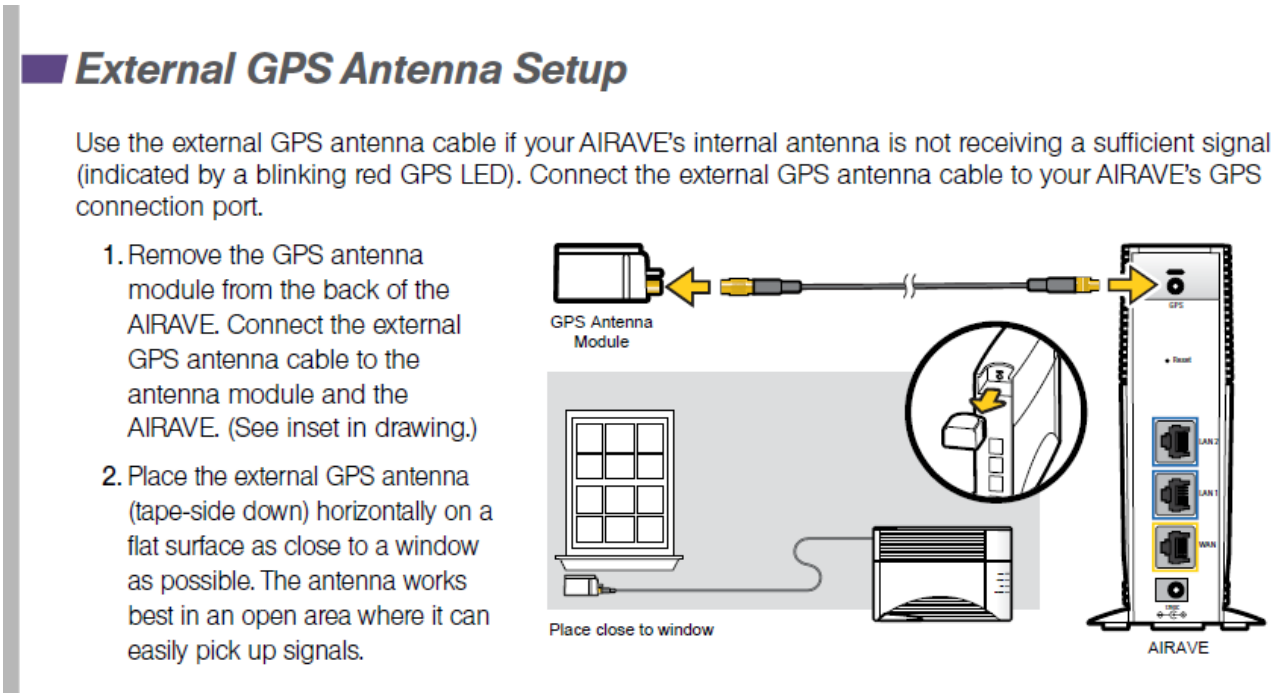


Fig. 15. Airave 2.5 Troubleshooting Guide, at 7 (depicting external and internal GPS antennae of the Airave, which are used to report the device's physical location).

COUNT I

INFRINGEMENT OF U.S. PATENT NO. 8,559,312

40. Plaintiff incorporates by reference Paragraphs 1 through 39 above.

41. Defendants have infringed and continue to infringe the '312 patent in violation of 35 U.S.C. § 271, directly and/or indirectly by at least manufacturing, supplying, distributing, selling and/or offering for sale products and/or systems, including the Accused Products, and/or by contributing to or inducing infringement with others with the intent to cause infringement of the '312 patent.

42. For example, as set forth in the preceding paragraphs, Defendants have infringed and continue to infringe at least claim 1 of the '312 patent, which discloses a "gateway to a packet-based data network comprising: a transceiver adapted to establish a radio frequency link with a mobile device; a connector to a packet based data network; and a connection regulator

adapted to facilitate data flow between the mobile device and the packet-based data network; wherein said gateway is adapted to determine a physical location of said gateway."[3]

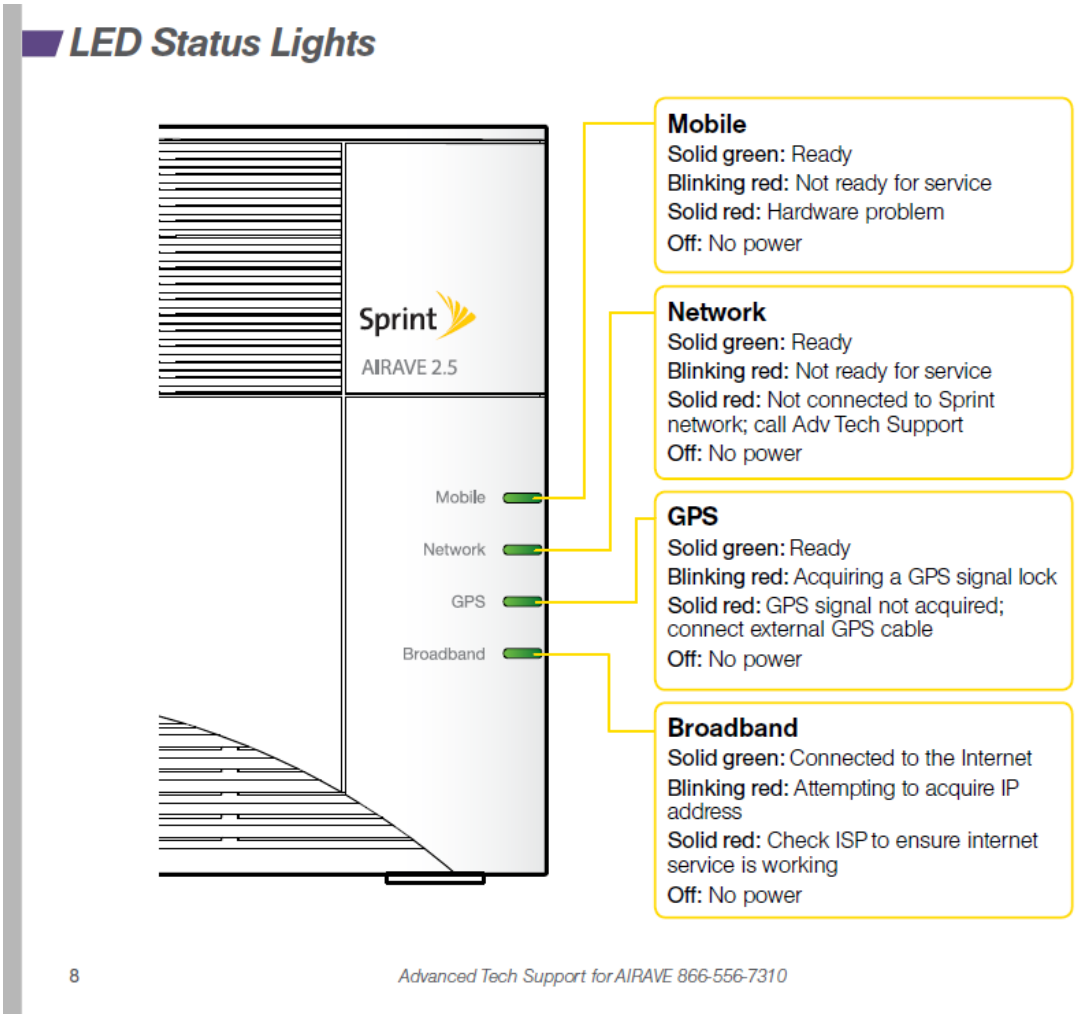
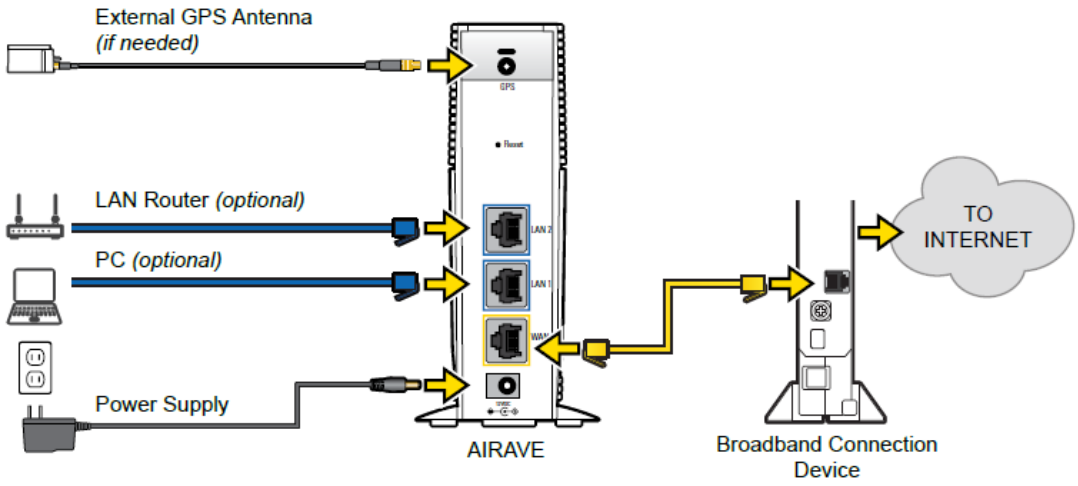


Fig. 16. Airave 2.5 Troubleshooting Guide, at 8: Depicting the Airave's communication with a mobile device and determination of its own physical location using GPS.

[3] Exhibit A, at 18.

Setup Overview

The following steps show a typical installation using a broadband cable modem. If you are using a different type of broadband connection, the steps will be similar. For detailed setup instructions, see the Read Me First insert provided in your box or online at sprint.com/airaveaccesspoint.



Attention: After installing and turning on your AIRAVE for the first time, it will go through an automated setup sequence. During this time, the device's LEDs will change color. When the Broadband, GPS, Network, and Mobile LEDs have changed to steady green, your AIRAVE is ready to use. This process may take up to two hours. For additional details about the AIRAVE 2.5 please see the User Guide or see "Resources" in this guide.

Fig. 17. Airave 2.5 Troubleshooting Guide, at 4: Illustrating the Airave transmitting data from a cell phone to, for example, the Internet, and determining its physical location via GPS.

The Sprint Magic Box Gold

Figure 67: Sprint Magic Box Gold

Fig. 18. Magic Box Gold User Guide, at 43. The Magic Box uses "dual transceivers" to communicate with a mobile device. *Id.* at 48.

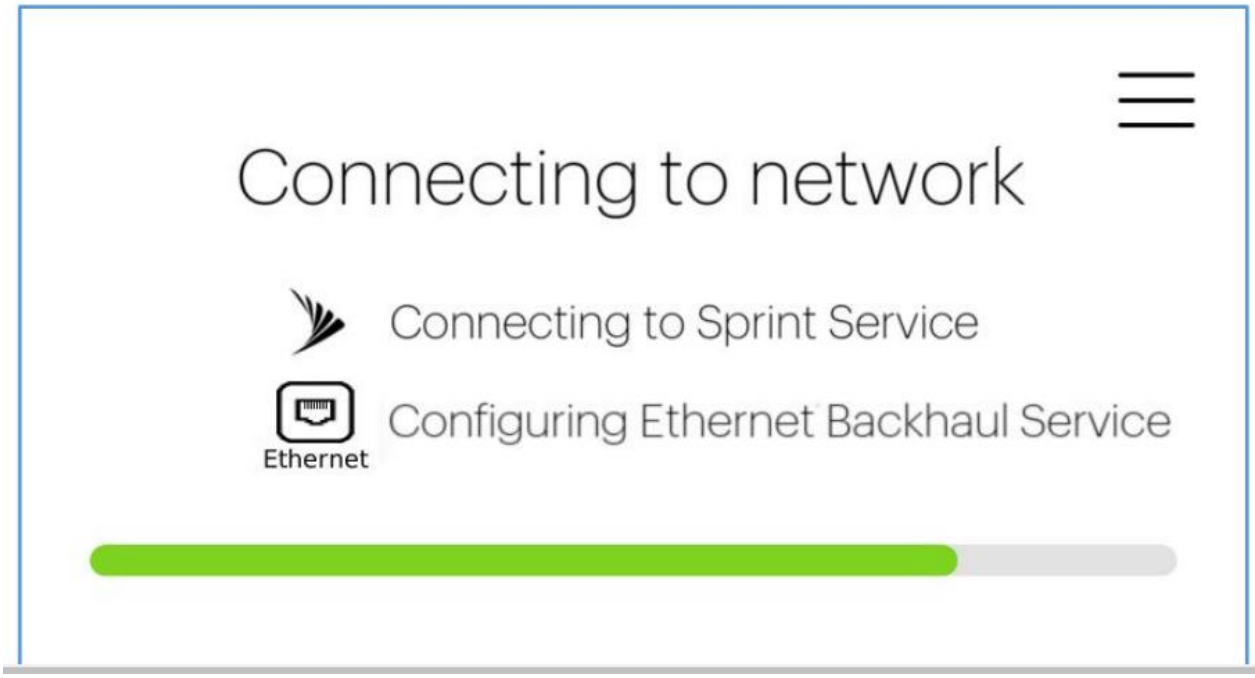


Fig. 19. Magic Box Gold User Guide, at 11 (depicting Magic Box functioning as gateway to, for example, the Internet ("Ethernet Backhaul")).

43. Where acts constituting direct infringement of the '312 patent are not performed by Defendants, such acts constituting direct infringement of the '312 patent are performed by Defendants' customers or end-users who act at the direction and/or control of Defendants, with Defendants' knowledge.

44. No later than the filing of this Complaint, Defendants have had actual knowledge of the '312 patent. Additionally, Plaintiff is informed and believes, and on that basis alleges, that Sprint gained actual knowledge of the patents-in-suit by learning of a prior suit by Plaintiff against Samsung and Verizon over infringing femtocell products. *See, e.g.*, First Amended Complaint ¶ 15, *Salazar v. AT&T Mobility LLC, Sprint/United Management Company, et al.*, No. 19-cv-75 (E.D. Tex. July 19, 2019) (citing *Barkan Wireless v. Samsung Elec. et al.*, No. 18-cv-00028).

45. Plaintiff is informed and believes, and on that basis alleges, that Defendants are indirectly infringing one or more claims of the '312 patent by active inducement in violation of 35 U.S.C. § 271(b), by at least manufacturing, supplying, distributing, selling and/or offering for sale the Accused Products to their customers with the knowledge and intent that use of those products would constitute direct infringement of the '312 patent.

46. For example, Defendants direct their customers how to install the Accused Products, including connecting it to, for example, the Internet; connecting the power supply; and connecting a GPS antenna for determining the Accused Product's physical location.

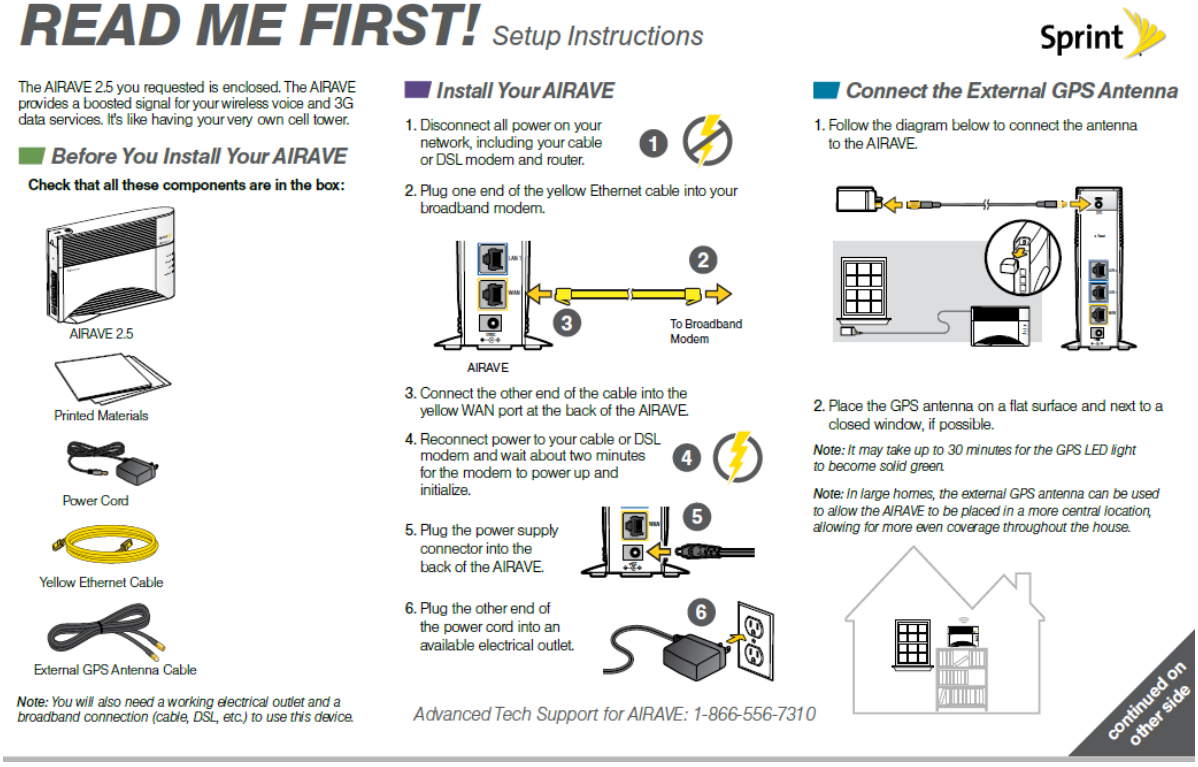


Fig. 20. Airave 2.5 Setup User Guide, at 1: Instructing consumers on how to install the Accused Products.

47. Plaintiff is informed and believes, and on that basis alleges, that Defendants also indirectly infringe one or more claims of the '312 patent by contributory infringement in violation of 35 U.S.C. § 271(c). Defendants are aware that components of the Accused Products are a material and substantial part of the invention claimed by the '312 patent, and that they are designed for a use that is both patented and infringing, and that has no substantial non-infringing uses.

48. Defendants' acts of infringement have caused damage to Plaintiff, and Plaintiff is entitled to recover from Defendants (or any successor entity to Defendants) the damages sustained by Plaintiff as a result of Defendants' wrongful acts in an amount subject to proof at trial.

COUNT II

INFRINGEMENT OF U.S. PATENT NO. 9,392,638

49. Plaintiff incorporates by reference Paragraphs 1 through 48 above.

50. Defendants have infringed and continue to infringe the '638 patent in violation of 35 U.S.C. § 271, directly and/or indirectly by at least manufacturing, supplying, distributing, selling and/or offering for sale products and/or systems, including the Accused Products, and/or by contributing to or inducing infringement with others with the intent to cause infringement of the '638 patent.

51. For example, as set forth in the preceding paragraphs, Defendants have infringed and continue to infringe at least claim 1 of the '638 patent, which discloses an "add-on base station comprising: a transceiver adapted to establish a radio-frequency link with a mobile device; a first interface, separate from said transceiver, that is adapted for communication over the public Internet; a controller adapted to: determine current geographical location data for the add-on base station using a global positioning system (GPS) device included in the add-on base station, wherein the current geographical location data includes location data determined by the GPS device; transmit recurrent updates regarding current operating parameters to a server of a server system via the public Internet, wherein the current operating parameters include current geographical location data and the server system is adapted to identify the base station based on a unique property stored in a tamper-free unit of the add-on base station and to track the add-on base station based on the identification; obtain, from a server of the server system accessed via the public Internet, gateway Internet Protocol (IP) address for a remote gateway that includes a first interface to the public Internet and a second interface communicably coupled to a network of a telephone service provider; route, using the gateway IP address, data from the mobile

device, over the public Internet, to the remote gateway; and wherein the add-on base station has transmission power lower than transmission power of convention base stations and produces a cell smaller than macrocells of conventional base stations, and wherein the server system is adapted to authorize and de-authorize add-on base stations to route data to the remote gateway through the public Internet by recurrently issuing an operating license for the add-on base station."

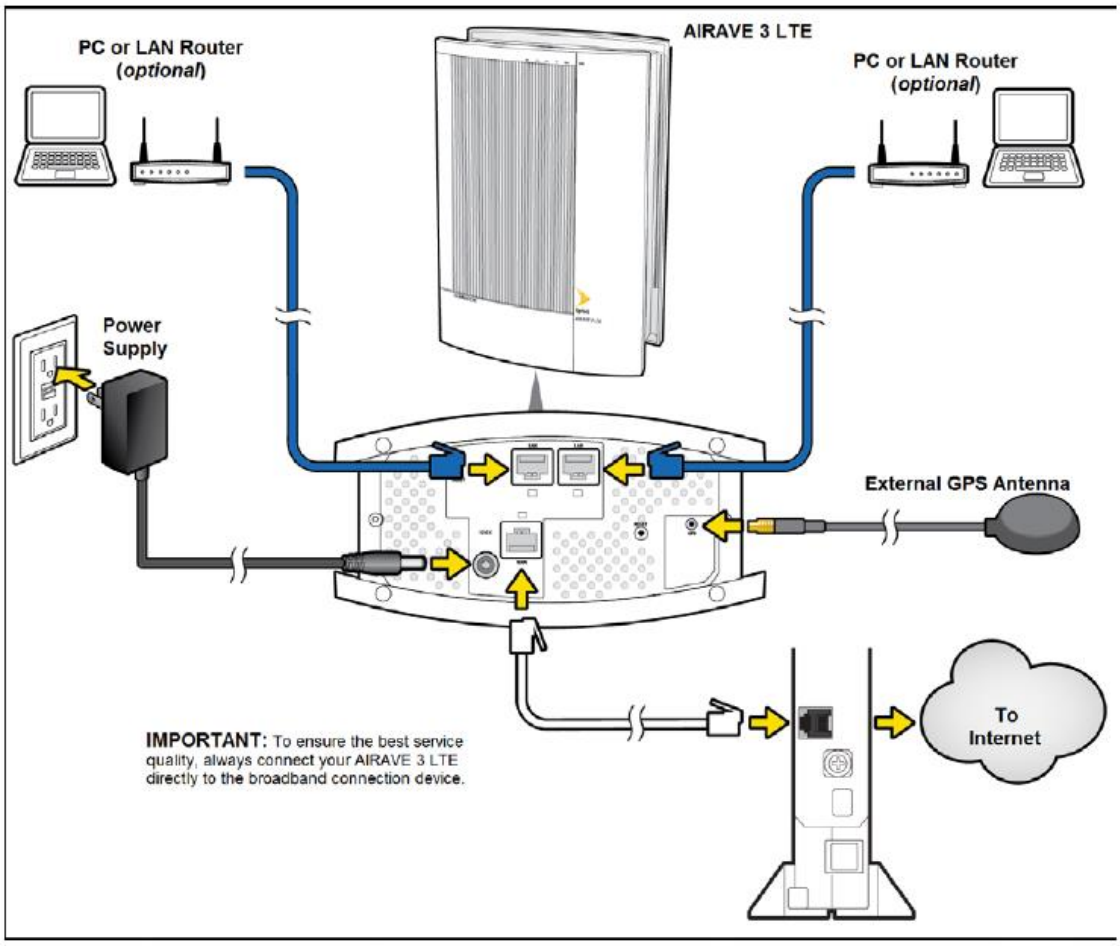
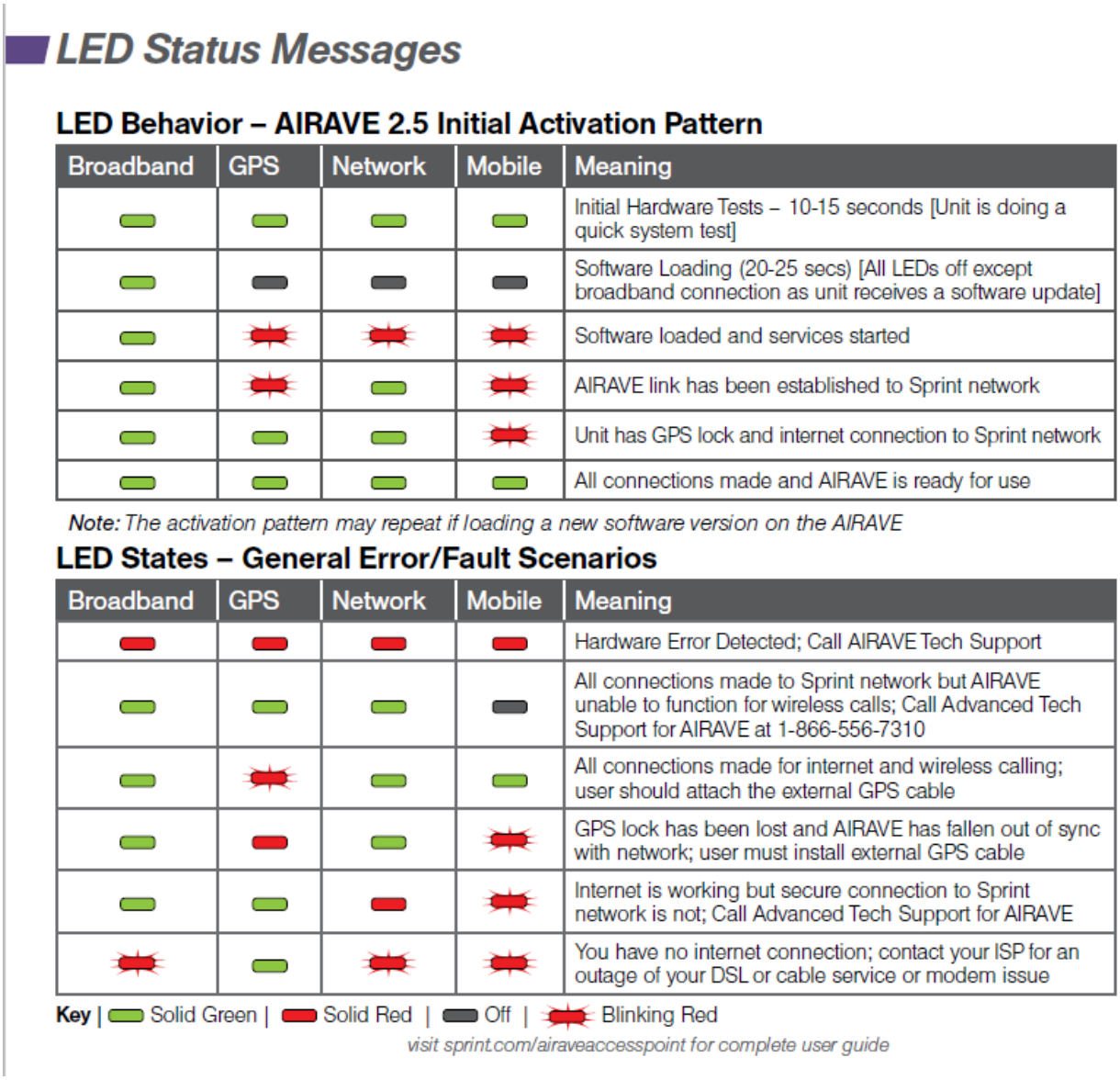


Fig. 21. Airave 3.0 User Guide, at 7: Depicting the Airave acting as an add-on base station comprising a transceiver for establishing a radio-frequency link with a mobile device; interface for communicating over, for example, the Internet, and controller adapted to determine the current geographical location data for the add-on base station using a global positioning system ("External GPS Antenna").



LED Status Messages

LED Behavior – AIRAVE 2.5 Initial Activation Pattern

Broadband	GPS	Network	Mobile	Meaning
				Initial Hardware Tests – 10-15 seconds [Unit is doing a quick system test]
				Software Loading (20-25 secs) [All LEDs off except broadband connection as unit receives a software update]
				Software loaded and services started
				AIRAVE link has been established to Sprint network
				Unit has GPS lock and internet connection to Sprint network
				All connections made and AIRAVE is ready for use

Note: The activation pattern may repeat if loading a new software version on the AIRAVE

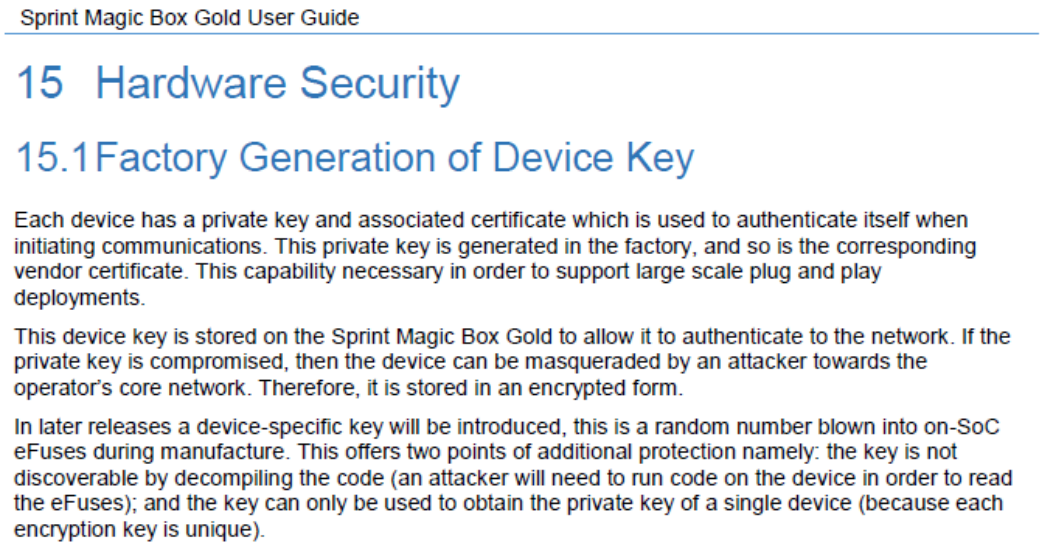
LED States – General Error/Fault Scenarios

Broadband	GPS	Network	Mobile	Meaning
				Hardware Error Detected; Call AIRAVE Tech Support
				All connections made to Sprint network but AIRAVE unable to function for wireless calls; Call Advanced Tech Support for AIRAVE at 1-866-556-7310
				All connections made for internet and wireless calling; user should attach the external GPS cable
				GPS lock has been lost and AIRAVE has fallen out of sync with network; user must install external GPS cable
				Internet is working but secure connection to Sprint network is not; Call Advanced Tech Support for AIRAVE
				You have no internet connection; contact your ISP for an outage of your DSL or cable service or modem issue

Key | Solid Green | Solid Red | Off | Blinking Red

visit sprint.com/airaveaccesspoint for complete user guide

Fig. 22. Airave 2.5 Troubleshooting Guide, at 9: Depicting fact that Airave is transmitting updates regarding current operating parameters, including, for example, location data.



Sprint Magic Box Gold User Guide

15 Hardware Security

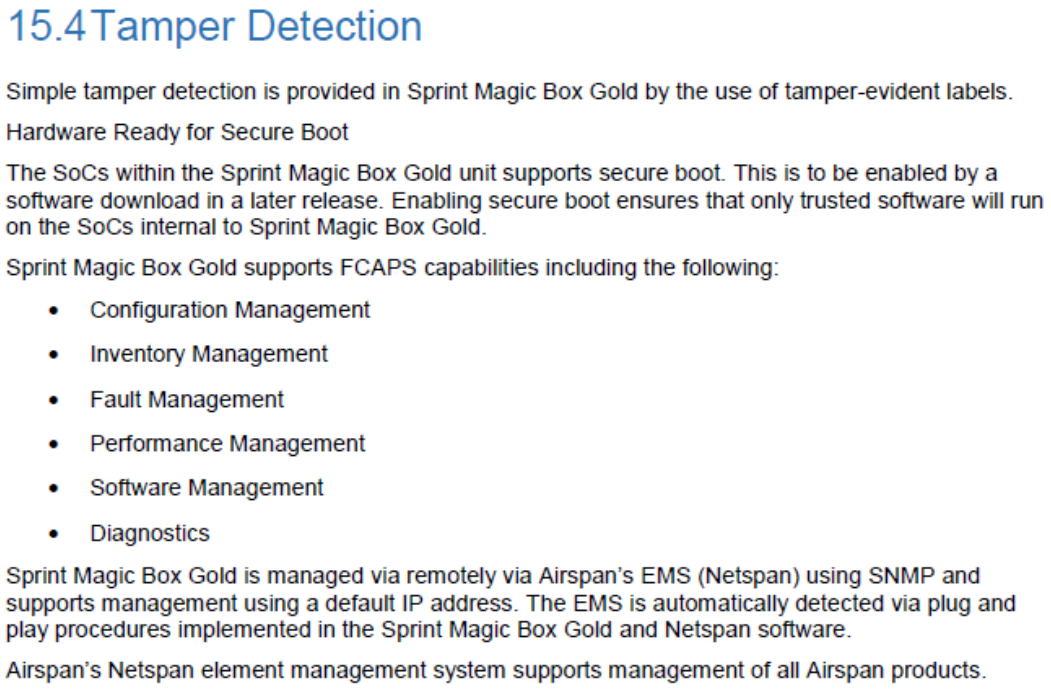
15.1 Factory Generation of Device Key

Each device has a private key and associated certificate which is used to authenticate itself when initiating communications. This private key is generated in the factory, and so is the corresponding vendor certificate. This capability necessary in order to support large scale plug and play deployments.

This device key is stored on the Sprint Magic Box Gold to allow it to authenticate to the network. If the private key is compromised, then the device can be masqueraded by an attacker towards the operator's core network. Therefore, it is stored in an encrypted form.

In later releases a device-specific key will be introduced, this is a random number blown into on-SoC eFuses during manufacture. This offers two points of additional protection namely: the key is not discoverable by decompiling the code (an attacker will need to run code on the device in order to read the eFuses); and the key can only be used to obtain the private key of a single device (because each encryption key is unique).

Fig. 23. Magic Box Gold User Guide, at 43: Depicting use of, for example, a "device-specific key" to authorize and/or authenticate the Magic Box Gold.



15.4 Tamper Detection

Simple tamper detection is provided in Sprint Magic Box Gold by the use of tamper-evident labels.

Hardware Ready for Secure Boot

The SoCs within the Sprint Magic Box Gold unit supports secure boot. This is to be enabled by a software download in a later release. Enabling secure boot ensures that only trusted software will run on the SoCs internal to Sprint Magic Box Gold.

Sprint Magic Box Gold supports FCAPS capabilities including the following:

- Configuration Management
- Inventory Management
- Fault Management
- Performance Management
- Software Management
- Diagnostics

Sprint Magic Box Gold is managed via remotely via Airspan's EMS (Netspan) using SNMP and supports management using a default IP address. The EMS is automatically detected via plug and play procedures implemented in the Sprint Magic Box Gold and Netspan software.

Airspan's Netspan element management system supports management of all Airspan products.

Fig. 24. Magic Box Gold User Guide, at 46: Depicting presence of "[t]amper [d]etection" in the Magic Box Gold; and that the device communicates using the IP Protocol remotely via the "Airspan's EMS (Netspan)," which is "automatically detected via plug and play" and "supports management of all Airspan products."

52. No later than the filing of this Complaint, Defendants have had actual knowledge of the '638 patent. Additionally, Plaintiff is informed and believes, and on that basis alleges, that Sprint gained actual knowledge of the patents-in-suit by learning of a prior suit by Plaintiff against Samsung and Verizon over infringing femtocell products. *See, e.g.*, First Amended Complaint ¶ 15, *Salazar v. AT&T Mobility LLC, Sprint/United Management Company, et al.*, No. 19-cv-75 (E.D. Tex. July 19, 2019) (citing *Barkan Wireless v. Samsung Elec. et al.*, No. 18-cv-00028).

53. Plaintiff is informed and believes, and on that basis alleges, that Defendants are indirectly infringing one or more claims of the '638 patent by active inducement in violation of 35 U.S.C. § 271(b), by at least manufacturing, supplying, distributing, selling and/or offering for sale the Accused Products to their customers with the knowledge and intent that use of those products would constitute direct infringement of the '638 patent.

54. Plaintiff is informed and believes, and on that basis alleges, that Defendants also indirectly infringe one or more claims of the '638 patent by contributory infringement in violation of 35 U.S.C. § 271(c). Defendants are aware that components of the Accused Products are a material and substantial part of the invention claimed by the '638 patent, and that they are designed for a use that is both patented and infringing, and that has no substantial non-infringing uses.

55. Defendants' acts of infringement have caused damage to Plaintiff, and Plaintiff is entitled to recover from Defendants (or any successor entity to Defendants) the damages sustained by Plaintiff as a result of Defendants' wrongful acts in an amount subject to proof at trial.

COUNT III

INFRINGEMENT OF U.S. PATENT NO. 8,014,284

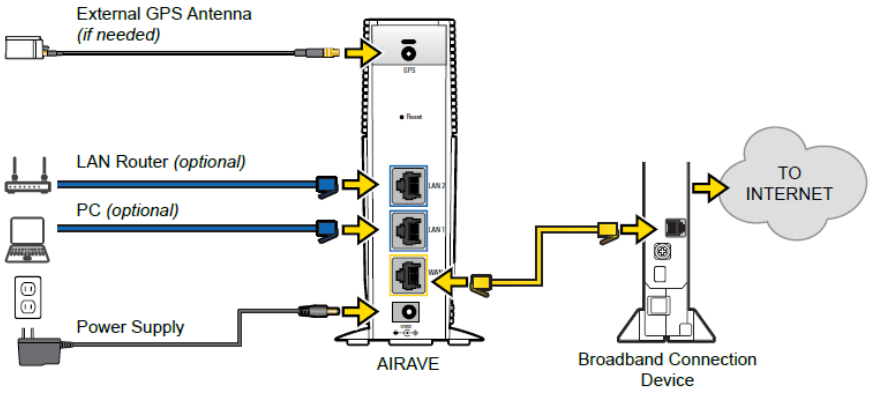
56. Plaintiff incorporates by reference Paragraphs 1 through 55 above.

57. Defendants have infringed and continue to infringe the ’284 patent in violation of 35 U.S.C. § 271, directly and/or indirectly by at least manufacturing, supplying, distributing, selling and/or offering for sale products and/or systems, including the Accused Products, and/or by contributing to or inducing infringement with others with the intent to cause infringement of the ‘284 patent.

58. For example, as set forth in the preceding paragraphs, Defendants have infringed and continue to infringe at least claim 15 of the ‘284 patent, which discloses a “communication system comprising a coordination center connected to a packet based data network through a first interface, two or more gateways functionally associated with a packet based data network, wherein each gateway comprises a transceiver adapted to establish a radio-frequency link with a mobile device; a second interface adapted to facilitate data flow between the mobile device and the data network; and a controller adapted to regulate data flow between the mobile device and the data network based, at least partially, on information received over the data network from said coordination center” wherein “said gateways further comprise a unique identity achieved by a unique number or digital document” and “said unique number or digital document contains an encryption key; and said controllers are further adapted to conduct encrypted communications with said center.”

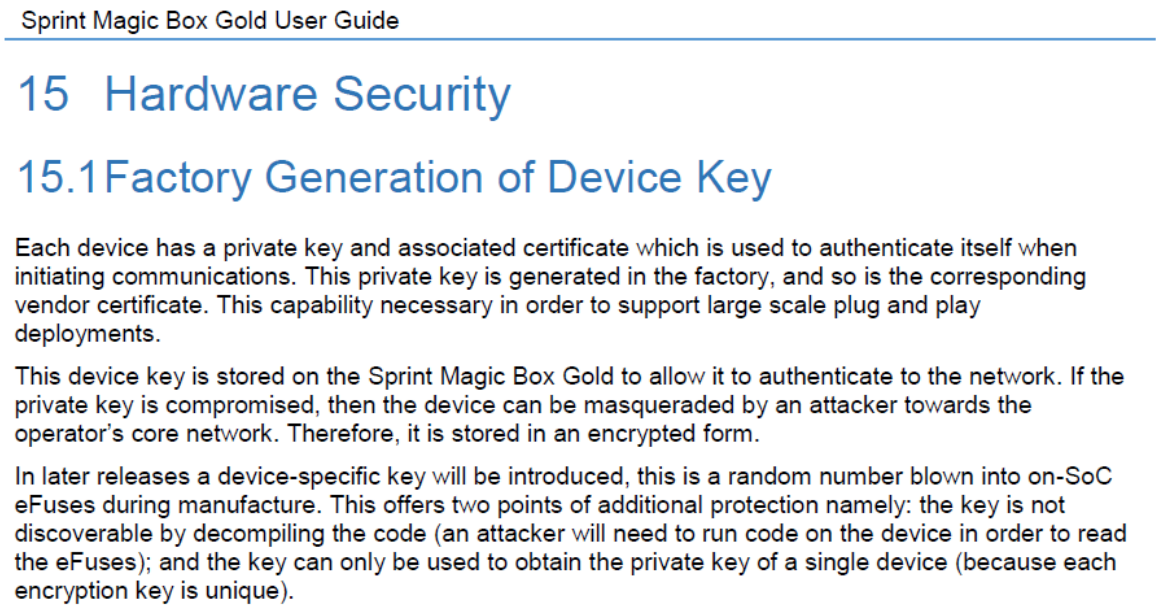
Setup Overview

The following steps show a typical installation using a broadband cable modem. If you are using a different type of broadband connection, the steps will be similar. For detailed setup instructions, see the Read Me First insert provided in your box or online at sprint.com/airaveaccesspoint.



Attention: After installing and turning on your AIRAVE for the first time, it will go through an automated setup sequence. During this time, the device's LEDs will change color. When the Broadband, GPS, Network, and Mobile LEDs have changed to steady green, your AIRAVE is ready to use. This process may take up to two hours. For additional details about the AIRAVE 2.5 please see the User Guide or see "Resources" in this guide.

Fig. 25. Airave 2.5 Troubleshooting Guide, at 4: Illustrating the Airave, with a transceiver adapted to establish a radio-frequency link with a cell phone, and an interface adapted to transmit data between the mobile device and, for example, the Internet (through the WAN, or Wide Area Network Port) and receive information from Sprint servers. *See also* Magic Box Gold User Guide, at 46 ("Sprint Magic Box Gold is managed . . . remotely via Airspan's EMS (Netspan) using SNMP and supports management using a default IP address. . . . Airspan's Netspan element management system supports management of all Airspan products.").



Sprint Magic Box Gold User Guide

15 Hardware Security

15.1 Factory Generation of Device Key

Each device has a private key and associated certificate which is used to authenticate itself when initiating communications. This private key is generated in the factory, and so is the corresponding vendor certificate. This capability necessary in order to support large scale plug and play deployments.

This device key is stored on the Sprint Magic Box Gold to allow it to authenticate to the network. If the private key is compromised, then the device can be masqueraded by an attacker towards the operator's core network. Therefore, it is stored in an encrypted form.

In later releases a device-specific key will be introduced, this is a random number blown into on-SoC eFuses during manufacture. This offers two points of additional protection namely: the key is not discoverable by decompiling the code (an attacker will need to run code on the device in order to read the eFuses); and the key can only be used to obtain the private key of a single device (because each encryption key is unique).

Fig 26. Magic Box Gold User Guide, at 53: Depicting use by the Magic Box Gold of a unique device specific-key that is "used to authenticate itself" and "is stored in an encrypted form." *See also* Magic Box Gold User Manual, at 49 (stating that Magic Box Gold uses "IPSec – Internet Protocol Security," a "protocol suite for securing Internet Protocol (IP) communications by authenticating and encrypting each IP packet of a communication session").

59. No later than the filing of this Complaint, Defendants have had actual knowledge of the '284 patent. Additionally, Plaintiff is informed and believes, and on that basis alleges, that Sprint gained actual knowledge of the patents-in-suit by learning of a prior suit by Plaintiff against Samsung and Verizon over infringing femtocell products. *See, e.g.*, First Amended Complaint ¶ 15, *Salazar v. AT&T Mobility LLC, Sprint/United Management Company, et al.*, No. 19-cv-75 (E.D. Tex. July 19, 2019) (citing *Barkan Wireless v. Samsung Elec. et al.*, No. 18-cv-00028).

60. Plaintiff is informed and believes, and on that basis alleges, that Defendants are indirectly infringing one or more claims of the '284 patent by active inducement in violation of 35 U.S.C. § 271(b), by at least manufacturing, supplying, distributing, selling and/or offering for

sale the Accused Products to their customers with the knowledge and intent that use of those products would constitute direct infringement of the '284 patent.

61. Plaintiff is informed and believes, and on that basis alleges, that Defendants also indirectly infringe one or more claims of the '284 patent by contributory infringement in violation of 35 U.S.C. § 271(c). Defendants are aware that components of the Accused Products are a material and substantial part of the invention claimed by the '284 patent, and that they are designed for a use that is both patented and infringing, and that has no substantial non-infringing uses.

62. Defendants' acts of infringement have caused damage to Plaintiff, and Plaintiff is entitled to recover from Defendants (or any successor entity to Defendants) the damages sustained by Plaintiff as a result of Defendants' wrongful acts in an amount subject to proof at trial.

JURY DEMAND

63. Plaintiff demands a trial by jury on all issues.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff BARKAN WIRELESS IP HOLDINGS, L.P. requests entry of judgment in its favor and against Defendants SPRINT CORPORATION, SPRINT COMMUNICATIONS CO., L.P., SPRINT SOLUTIONS, INC., SPRINT SPECTRUM, L.P., and COMMSCOPE, INC. as follows:

a) Declaration that Defendants have infringed United States Patent Nos. 8,559,312, 9,392,638, and 8,014,284;

b) Awarding damages, in an amount no less than a reasonable royalty, arising out of Defendants' infringement of United States Patent Nos. 8,559,312, 9,392,638, and 8,014,284 to Plaintiff, together with prejudgment and post-judgment interest, in an amount according to proof;

c) An award of attorney's fees pursuant to 35 U.S.C. § 285 or as otherwise permitted by law; and

d) For such other costs and further relief as the Court may deem just and proper.

DATED: December 5, 2019

Respectfully submitted,

/s/ Max L. Tribble, Jr.

Max L. Tribble, Jr. – Lead Counsel
Texas State Bar No. 20213950
Justin Nelson
Texas State Bar No. 24034766
SUSMAN GODFREY, L.L.P.
1000 Louisiana Street, Suite 5100
Houston, Texas 77002
Telephone: (713) 651-9366
Facsimile: (713) 654-6666
mtribble@susmangodfrey.com
jnelson@susmangodfrey.com

Matthew R. Berry
Washington State Bar No. 37364
Alexander W. Aiken
New York State Bar No. 5599832
SUSMAN GODFREY, L.L.P.
1201 Third Ave., Suite 3800
Seattle, Washington 98101
Telephone: (206) 516-3880
Facsimile: (206) 516-3883
mberry@susmangodfrey.com

William D. O'Connell
New York State Bar No. 5491014
SUSMAN GODFREY, L.L.P.
1301 Avenue of the Americas, 32nd Fl.
New York, New York 10019-6023

Telephone: (212) 336-8330
Facsimile: (212) 336-8340
boconnell@susmangodfrey.com

S. Calvin Capshaw
Texas State Bar No. 03783900
ccapshaw@capshawlaw.com
CAPSHAW DERIEUX LLP
114 E. Commerce Ave.
Gladewater, TX 75647
Telephone (903) 845-5770

T. John Ward, Jr.
Texas State Bar No. 00794818
jw@wsfirm.com
WARD, SMITH & HILL, PLLC
PO Box 1231
Longview, Texas 75606
Telephone: (903) 757-6400
Facsimile: (903) 757-2323